CICS Tools: Tuning CICS with CICS Performance Analyzer V5.3

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http://www.fundi.com/virtualcics/meetings.htm
Webinar ID: 939-962-403
CICS Performance Analyzer for z/OS

Introduction
This session introduces IBM’s premier CICS tuning product, CICS Performance Analyzer for z/OS

- Functions and features of the product
- Real-world examples of how to resolve performance problems and optimize operations
CICS tasks and programs

• A task is an instance of a transaction started by a user

• When a user types in data and presses Enter or a Function key, CICS begins a task and loads the necessary programs

• Tasks run concurrently. Therefore, a user can run multiple instances of the same transaction simultaneously

• CICS multitasks giving fast response times

• CICS runs each task, briefly giving CPU to each one
CICS monitoring facility (CMF)

- CMF collects data about all transactions in CICS
- Records are written to SMF for later offline processing
- CMF collects 4 classes of data: exception, identity, performance, and transaction resource
- CMF can produce a significant volume of data, so CICS compresses the data by default
- To exclude monitoring data fields, use a monitoring control table (MCT)
- To process output you can use CICS Performance Analyzer or CICS-supplied sample program DFH$MOLS

Sources of data for CICS Performance Analyzer

- SMF 110
  - CICS monitoring facility
- 110
  - CICS TS statistics
- 88
  - System logger: CICS journalling
- 101
  - DB2 accounting
- 116
  - MQ accounting
- 112
  - OMEGAMON XE for CICS
CMF data types

- **Exception class**
  - Information about resource shortages encountered
    - Queuing for file strings
    - Wait for temporary storage buffers
  - Highlights problems in CICS system operation
  - Identifies system constraints that affect performance
  - One exception record written for each condition that occurs

- **Identity class**
  - Provides enhanced audit information
  - Captures identity propagation data from a client system across a network for eligible transactions
CMF data types

• **Performance class**
  - Provides detailed transaction information
  - Processor and elapsed time
  - Time spent waiting for I/O
  - One record per transaction

• **Transaction Resource class**
  - Additional transaction level information about individual resources accessed by a transaction
  - Items such as distributed program links, file and temporary storage queues
  - One transaction resource record per transaction monitored
  - Record cut only if transaction accesses at least one resource being monitored
Response time

- Response time consists of two elements:
  1. **Suspend time**: the time a task is not executing (waiting)
  2. **Dispatch time**: the time that CICS thinks the task is executing. This time is further divided into:
     A. **CPU time**: the time the task is executing on CPU
     B. **Wait time**: the time the CPU has been taken away from the task without the knowledge of CICS

- CPU to dispatch ratio:
  - Ratio = (CPU time/dispatch time) * 100
  - Objective is 80% or higher
Response time structure of CICS transaction

Total CICS response time

Start

- First dispatch delay
  - DSPDELAY
- TCLDELAY
- MXTDELAY
- other

Suspend time

- SUSPTIME
- Dispatch wait
  - DISPWT

Dispatch time

End

- USRDISPT
- CPU time
  - USRCPUT
- PC load
  - PCLOADTM
- Involuntary
  - MVS wait time

Involuntary MVS wait time

CICS Tools: Tuning CICS with CICS Performance Analyzer V5.3
Suspend time breakdown

Suspend time = First dispatch time + I/O wait time + Unaccounted wait time

First dispatch delay includes
TRANCLASS delay and MXT delay

Total I/O wait time =
(terminal I/O wait time +
temporary storage I/O wait time +
shared temporary storage I/O wait time +
transient data I/O wait time +
journal (MVS Logger) I/O wait time +
file I/O wait time +
RLS file I/O wait time +
Coupling Facility Data Table (CFDT) I/O wait time +
inbound socket I/O wait time +
outbound socket I/O wait time +
inter-region (MRO) I/O wait time +
LU 6.1 I/O wait time +
LU 6.2 I/O wait time +
FEPI I/O wait time)

Other wait time + Unaccounted wait time

Total Other wait time =
(CICS OTE TCBS delay time +
CICS change-TCB mode delay time +
TCB mismatch wait time +
ENQ delay time +
IC/WAIT interval control delay time +
Lock Manager (LM) delay time +
RMI suspend time +
BTS delay +
JVM suspend +
request receiver wait time +
request processor wait time +
RRMS/MVS in-doubt wait time +
3270 bridge partner wait time +
CFDT server sync point wait time +
MVS storage constraint wait time +
dispatchable waits wait time)
You can analyze CICS performance yourself!

- Various report templates
- Statistics alerts automation
- Graphical reports for sharing
- Most CICS experts are using CICS PA

You can analyze CICS performance yourself!

- Various report templates
- Statistics alerts automation
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- Most CICS experts are using CICS PA
What is CICS PA?

• A comprehensive performance reporting and analysis tool for CICS
• Provides ongoing system management and measurement reports on all aspects of CICS application performance

How does it work?

• Uses SMF data as input
• Easy to use interface for report generation (over 250 supplied report forms)
• Performance and statistical analysis
• Graphical performance analysis via CICS Explorer
What is its value?

• Analyze CICS application performance
• Improve CICS resource usage
• Evaluate the effects of CICS tuning efforts
• Improve transaction response time
• Provide ongoing system management and measurement reports
• Increase availability of resources
• Increase the productivity of system and application programmers
• Provide awareness of usage trends

Why is it important?

• Reduce time and resource required to analyze offline performance data
• Enables deep-dive CICS performance analysis and understanding of usage trends
• Aids capacity planning and tuning
• Help quickly identify trends, anticipate and prevent online performance problems
Benefits

• Ease of use
  – No additional setup or customization required
  – Familiar CICS terms and concepts

• ISPF dialog to build, maintain, and submit reports
  – Tailor your reports easily using report forms
  – Extensive online help available, and field descriptions

• Extensive tabular reports and graph reports
  – Summary, Wait Analysis, ...
  – Resource Usage, DB2, WebSphere MQ, z/OS System Logger

• Extract data sets
  – Cross-System Work, Export, Record Selection, System Logger
Benefits

• Trend and capacity planning

• Statistics reporting capability
  – Comprehensive reporting and analysis of CICS statistics data
  – Alert processing to highlight potential tuning opportunities

• Transaction profiling
  – Compares transaction performance between two time periods

• Plug-in to the CICS Explorer
  – Graphical interface allows for interactive query analysis of performance data with the ability to create charts and graphs
Settings for SMF data collection

CICS 110 records
1. Turn on Exception and Performance class monitoring:
   – MN=ON
   – MNPER=ON
   – MNEXC=ON
2. Review MCT settings for each region
   – Ensure that RMI is set to YES in the MCT so details are collected for each of the resource managers
3. Ensure the statistics settings are as follows:
   – STATRCD=ON
   – STATINT=010000 (010000 is for 1 hour. You may choose to set the interval differently)

DB2 101 records
– Include ACCOUNTREC(TASK) in the DB2CONN resource definition to collect DB2 data at the task level

MQ 116 records
– To report IBM MQ details, you must collect SMF 116 records from MQ
  See IBM Knowledge Center for details [https://www-01.ibm.com/support/knowledgecenter/](https://www-01.ibm.com/support/knowledgecenter/)
CICS Performance Analyzer for z/OS

CICS PA overview and performance reporting
IBM CICS Performance Analyzer for z/OS

Getting Started Guide

Version 5 Release 3
ISPF interface

Performance reports identify troublesome transactions

Statistics reports identify resources and CICS functions that could be affecting CPU consumption

Command ==> ____________________________ Scroll ==> CSR

Row 1 of 25

Report Set - MAXTASK

Scroll ==> PAGE

** Reports **
- + ____ Options
  + ____ Selection Criteria
  - ____ Performance Reports
    - ____ List
    - ____ List Extended
    - ____ Summary
    - ____ Totals
    - ____ Wait Analysis, Transaction Profiling
    - ____ Cross-System Work
    - ____ Transaction Group
    - ____ BTS
    - ____ Workload Activity
    - ____ Transaction Tracking List
    - ____ Transaction Tracking Summary
  + ____ Exception Reports
  + ____ Transaction Resource Usage Reports
  - ____ Statistics Reports
    - ____ List
    - ____ Summary
    - ____ Alert
    - ____ CICS Transaction Gateway

Command ==> ____________________________ Scroll ==> CSR

Row 1 from 1

MAXTASK - Performance List Reports

____ System Selection ____

/ Exc APPLID + Image + Group + Output MXTBYTSK MXTBYTSK

- _______ _______ _______ _______ _______ _______ _______  

Command ==> ____________________________ Scroll ==> CSR

Row 1 from 1

MAXTASK - Performance Summary Reports

____ System Selection ____

/ Exc APPLID + Image + Group + Output MXTBYTOD MXTBYTOD

- _______ _______ _______ _______ _______ _______ _______  

Command ==> ____________________________ Scroll ==> CSR

Row 1 from 3

MAXTASK - Statistics Summary Reports

____ System Selection ____

/ Exc APPLID + Image + Group + Output STGOVRV STGOVRV

- _______ _______ _______ _______ _______ _______ _______  

- _______ _______ _______ _______ _______ _______ _______  

- _______ _______ _______ _______ _______ _______ _______  

Description ... MXT exceeded analysis

Enter "/" to select action.

Performance reports identify troublesome transactions.

Statistics reports identify resources and CICS functions that could be affecting CPU consumption.
Report forms

- Report forms allow you to tailor the output and format of your reports and data extracts
- Over 250 sample report forms provided with CICS PA, covering every aspect of CICS transaction activity and resource usage

Each sample can be used as it is, or easily customized
### Easy to customize sample reports

**Selection Criteria:**
- **Performance**

**Page width**: 132

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<thead>
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<th>Type</th>
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<td>PROGRAM</td>
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<tr>
<td>EOR</td>
<td></td>
<td>Additional record</td>
</tr>
<tr>
<td>EOX</td>
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<td>Additional record</td>
</tr>
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<tr>
<td>ABCODEOO</td>
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<td>Original ABEND Code</td>
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**7 date/time formats are available**

**Line command H provides help and expanded description of each field**

**Move (M) a field after (A) another field to reorder fields. Fields above EOR appear in report.**
## Performance List report – File Requests

### CICS Performance Analyzer

Performance List

**LIST0001** Printed at 9:31:21 10/14/2016  
Data from 22:59:58 4/19/2016  
APPLID CJTCNQ2

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<th>Dispatch Time</th>
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</table>

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CICS Tools: Tuning CICS with CICS Performance Analyzer V5.3
Performance Summary report

• Sort and summarize the data in your report
• Sorting criteria
  – Up to eight sort fields
  – Ascending or descending sequence (in any combination)
• Statistics functions available include:
  – Avg, Min, Max, Total, Std Deviation, Peak Percentile, Range, ...
• Reporting options:
  – Time Interval
  – Totals Level:
    • blank – suppress totals
    • 0 through 8 – optional sub-totals
EDIT SUMMARY Report Form - PS1

Command ==> Scroll ==> CSR

Description . . . Summary Report Form Version (VRM): 700

Selection Criteria:
_ Performance

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...
### Performance Summary report

#### CICS Performance Analyzer

**Performance Summary**

- **V5R3M0**
- **CICS Tools: Tuning CICS with CICS Performance Analyzer V5.3**

#### Data from 00:17:50 11/23/2015 to 23:59:49 11/23/2015

<table>
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<tr>
<th>Tran</th>
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<th>Avg Response Time</th>
<th>Avg Response Dispatch Time</th>
<th>Avg User CPU Time</th>
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<th>Max Dispatch Wait</th>
<th>Avg Suspended DispWait</th>
<th>Avg FC Wait</th>
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<th>Avg SC24UH Count</th>
<th>Avg SC31UH Count</th>
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Performance Wait Analysis report

- Summary of transaction activity by suspend wait time
- Summarized by transaction ID (default), highlights:
  - the resource that cause a transaction to be suspended
  - the CICS system resource bottlenecks that may be causing bad response time
- Enables a detailed analysis to be more easily performed
  - focusing on the problem resources identified
### Summary Data

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<th>Time</th>
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<th>Ratio</th>
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<td>Dispatch Time</td>
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<td>QR TCB Redisp. Wait Time</td>
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### Suspend Detail

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Threadsafe

*Use CICS Performance Analyzer to analyze your CICS applications to determine which of these applications are good candidates for Threadsafe....and then when to stop*

- How many switches (change modes) occurred?
  - What was the delay as the result?
- How much CPU time did they use?
  - What is this costing me?
- Sample Report Forms
  - CPU Usage, Delays, Change Mode Delays, Transaction Profiling ...
- Without CICS PA, threadsafe analysis would be a longer and more painful process
Transaction Threadsafe Analysis report set

THRDSAFE - Wait Analysis Reports
WAIT0001

THRDSAFE - Performance Summary Reports
- CPU5SUM: transaction CPU analysis (V5)
- CPU5SUMC: transaction CPU count analysis (V5)
- CPU85SUM: transaction CPU analysis (V5) (key 8)
- CPU95SUM: transaction CPU analysis (V5) (key 9)
- DISPSUM: transaction Dispatch/CPU usage
- CHMDSSUM: EXEC CICS commands and change CICS TCB Modes analysis - Summary

THRDSAFE - Performance List Reports
- CHMDSLST: EXEC CICS commands and change CICS TCB Modes analysis - List

THRDSAFE - Performance List Extended Reports
- BADCHMDS: top 20 change TCB modes

THRDSAFE - Statistics Summary Reports
- DISPOVRV: Dispatcher statistics overview
- TCBMODES: Dispatcher statistics TCB Modes
- TCBPOOLS: Dispatcher statistics TCB Pools
- MONTORNG: Monitoring statistics summary

CICS Tools: Tuning CICS with CICS Performance Analyzer V5.3
### CICS Performance Analyzer

#### Performance Summary

**CHMDSSUM** Printed at 8:20:00 9/28/2016

Data from 10:28:44 4/19/2016 to 11:15:00 4/19/2016

Transaction threadsafe analysis - EXEC CICS commands and change CICS TCB Modes analysis - Summary

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<th>CPU Time</th>
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Cross-System Work report

- Combines CMF records from your connected systems to produce a consolidated unit-of-work report
  - Default report includes only the performance class records that have the same network unit-of-work in multiple records in a single or multiple systems
- Records can be sorted by:
  - Network unit-of-work prefix and suffix
  - Syncpoint count concatenated with descending stop time (default) or ascending start time
  - Generic APPLID
- Report can be tailored using report forms
- Selection criteria
  - By record or unit-of-work
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<th>Term</th>
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<td>ISCA CICSPRD TO UMD</td>
<td>&lt;AFL CICSPSG AP:F-- E1VMMSP0 T/&lt;AFL PSOS EBD1.CICSPSG</td>
<td>1 PSO5CICG 39414 T 10:01:19.855 .1116</td>
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<tr>
<td>TKP0 CICSPRD SD U</td>
<td>AP: P1VCTKP0</td>
<td>EBD1.CICSPSG</td>
<td>5 CICSPSG 96378 T 10:01:20.109 .2484</td>
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<tr>
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<td>3 CICSPACG 78419 T 10:01:19.905 .0028</td>
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<tr>
<td>TKP0 CICSPRD SD U</td>
<td>AP: P1VCTKP0</td>
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<td>5 CICSPSG 96394 T 10:01:20.642 .4295</td>
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<td>3 CICSPACG 78423 T 10:01:20.302 .0009</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A template defines which fields to collect

Useful for performance data, over time

Useful for performance data, single event

CICS PA historical database (HDB)
CICS Performance Analyzer for z/OS

CICS PA statistics reporting
CICS statistics

• Statistics domain collects a variety of data and writes it to the SMF data set
• Provides information about resources and domains
  – Counts and wait times for resource requests
  – Processor and storage use
• Some statistics counters can be reset when records are cut
• Interval recording can be set on/off using STATRCD (SIT)
• Records can be processed by DFHSTUP, DFH0STAT or CICS Performance Analyzer
When does CICS collect statistics?

• **Interval statistics**
  – At intervals set: default every hour
  – Requires STATRCD=ON in SIT
  – Can be turned on using SET command

• **End-of-day statistics**
  – When CICS shuts down either normal or immediate
  – At midnight (by default) in 24/7 operations

• **Requested statistics**
  – EXEC CICS Perform statistics record
  – EXEC CICS Set statistics RECORDNOW
  – CEMT Perform statistics
  – Can be issued with any combination of resources
When does CICS collect statistics?

- **Requested Reset statistics**
  - EXEC CICS Perform statistics record RESTNOW
  - EXEC CICS Set statistics RECORDNOW RESETNOW
  - CEMT Perform statistics all RESTNOW
  - Differs from Request Statistics as counters are reset
  - Causes loss of data since the last statistics interval

- **Unsolicited statistics**
  - Collected for resources allocated or de-allocated
  - Written to SMF before resource is deleted
  - Produced for resources such as, Atom Feeds, Autoinstalled Terminals, Files, DB2, FEPI, IPCCONN, etc.
CICS statistics and CICS server statistics support

- Comprehensive reporting and analysis of CICS TS and TG statistics
- Forms for personalized reports
- Sorting by fields in the form
- Batch reporting
- Online reporting
Statistics reporting

- From an SMF files (option 6 **Statistics > 4 Process SMF File**), or
- From a STATS HDB (option 5.4, select a STATS HDB, 1 **Start online reporting**, press Enter)

![Select from the list of statistics collection intervals in the selected SMF files or HDB](image)

<table>
<thead>
<tr>
<th>System</th>
<th>Image</th>
<th>VRM</th>
<th>Type</th>
<th>--- Collection Time ---</th>
<th>Reset</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>IYCUZC31</td>
<td>MV2A</td>
<td>690</td>
<td>TS</td>
<td>2015/07/29 14:02:36 Wed</td>
<td>13:43:46</td>
<td></td>
</tr>
<tr>
<td>IYCUZC31</td>
<td>MV2A</td>
<td>690</td>
<td>TS</td>
<td>2015/07/29 14:02:42 Wed</td>
<td>13:43:46</td>
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</tr>
<tr>
<td>IYCUZC31</td>
<td>MV2A</td>
<td>690</td>
<td>TS</td>
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<td>13:43:46</td>
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<tr>
<td>IYCUZC31</td>
<td>MV2A</td>
<td>690</td>
<td>TS</td>
<td>2015/07/29 14:02:45 Wed</td>
<td>13:43:46</td>
<td></td>
</tr>
<tr>
<td>IYCUZC31</td>
<td>MV2A</td>
<td>690</td>
<td>TS</td>
<td>2015/07/29 14:02:46 Wed</td>
<td>13:43:46</td>
<td></td>
</tr>
<tr>
<td>IYCUZC31</td>
<td>MV2A</td>
<td>690</td>
<td>TS</td>
<td>2015/07/29 14:02:52 Wed</td>
<td>13:43:46</td>
<td></td>
</tr>
</tbody>
</table>
Accessing the statistics reports in ISPF

- Am I hitting the MXT limit?
- How was the Response Time affected?
- What are the average and peak response times?
- What are the z/OS WLM settings?
- What are the CICS Dispatcher settings?

**Reports**
- Regions
- Transaction Manager
- Monitoring
- CICS Dispatcher
- Dispatcher Overview
- Dispatcher TCB Modes
- Dispatcher TCB Pools
- ...

**System:** IYCYZC20/MV2E  **Type:** INT  **Interval:**

**Command:** REPORT

CICS Tools: Tuning CICS with CICS Performance Analyzer V5.3
System: IYCYZC2N/MV2E  Type: INT  Interval: 2015/03/25 16:00:00 Wednesday

Global Statistics Length .......: 128
CICS TCB MODEs .............: 18
CICS TCB POOLs ............: 4
Current ICV Time ..........: 00.00.01.000
Current ICVR Time .......: 00.00.05.000
Current ICVTSD Time ......: 00.00.00.000
Current PRTYAGE Time ....: 00.00.32.768
Concurrent Subtask TCBs ....: 0
Current MRO (QR) Batching .......: 1
Current Tasks ............: 29
Peak Tasks ................: 31
Dispatcher Start Time GMT ....: 2015-03-10-13.39.06
Dispatcher Start Time Local ..: 2015-03-10-13.39.06
Address Space CPU Time ....: 00.00.00.056095
Address Space SRB Time ...: 00.00.00.006233
Excess TCB Scans ..........: 1
Excess TCB Scans No TCB Detached ......: 1
Excess TCBs Detached ......: 0
Statistics alerts

• Help you find potential **tuning opportunities**
• Identify **trends** that could lead to poor CICS performance or even unnecessary CICS system outages
• Can help you focus your analysis efforts on:
  – specific CICS regions
  – a time of day
  – specific types of CICS resources
EDIT Statistics Alert Definition - SAMP1  Row 4 of 226  More: >

Command ==> ____________________________ Scroll ==> CSR

Description   ... CICS TS Sample Alerts

Specify the Conditions for this Alert Definition.

<table>
<thead>
<tr>
<th>Alert</th>
<th>Description</th>
<th>Formula</th>
<th>Critical</th>
<th>Warning</th>
<th>Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>System dumps requested</td>
<td>System dumps requested</td>
<td>SYS_DUMPS_TAKEN</td>
<td>&gt;5</td>
<td>&gt;0</td>
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</tr>
<tr>
<td>Maximum tasks reached</td>
<td>Maximum tasks reached</td>
<td>XMGTMXT</td>
<td>&gt;10</td>
<td>&gt;0</td>
<td></td>
</tr>
<tr>
<td>Peak tasks (% of maximum tasks)</td>
<td>Peak tasks (% of maximum tasks)</td>
<td>XMGPAT / XMGMXT * 100</td>
<td>&gt;=90</td>
<td>&gt;=80</td>
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<tr>
<td>Sev</td>
<td>Alert</td>
<td>Threshold</td>
<td>Actual</td>
<td>Collection Time</td>
<td>Type</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------</td>
<td>-----------</td>
<td>--------</td>
<td>-------------------</td>
<td>------</td>
</tr>
<tr>
<td>C</td>
<td>File string waits</td>
<td>&gt;10</td>
<td>37</td>
<td>2015-07-27 16.15.00</td>
<td>INT</td>
</tr>
<tr>
<td></td>
<td>File Name = TRMNALDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>File buffer waits</td>
<td>&gt;10</td>
<td>280</td>
<td>2015-07-27 16.15.00</td>
<td>INT</td>
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<tr>
<td></td>
<td>LSR Pool Number = 5</td>
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<tr>
<td>C</td>
<td>Maximum tasks reached</td>
<td>&gt;10</td>
<td>12</td>
<td>2015-07-27 16.15.00</td>
<td>INT</td>
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<tr>
<td>C</td>
<td>Temporary storage: buffer waits on DFHTEMP</td>
<td>&gt;10</td>
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<td>2015-07-27 16.15.00</td>
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<tr>
<td>C</td>
<td>File string waits</td>
<td>&gt;10</td>
<td>462</td>
<td>2015-07-27 16.20.00</td>
<td>INT</td>
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<tr>
<td></td>
<td>File Name = INVENTOR</td>
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<td>C</td>
<td>File string waits</td>
<td>&gt;10</td>
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<td>2015-07-27 16.20.00</td>
<td>INT</td>
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<tr>
<td></td>
<td>File Name = PARTS</td>
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<tr>
<td>C</td>
<td>File string waits</td>
<td>&gt;10</td>
<td>16</td>
<td>2015-07-27 16.20.00</td>
<td>INT</td>
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<td>File Name = TRMNALDB</td>
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<td>C</td>
<td>File buffer waits</td>
<td>&gt;10</td>
<td>65</td>
<td>2015-07-27 16.20.00</td>
<td>INT</td>
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<tr>
<td></td>
<td>LSR Pool Number = 5</td>
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</tbody>
</table>
Statistics alerts via the Explorer

- Critical, warning, information
- Opening a stat will provide its individual stats record if available
CICS Performance Analyzer

Plug-in to the CICS Explorer
CICS PA plug-in to the CICS Explorer

• Graphical representation of performance and statistics data
• View statistics and performance alerts
• View data from CSV files or loaded from an HDB into DB2
• Customizable sheet view
• Bar charts, pie charts, and other graphs
Flexibility with what you want to see

See extracts of the file in a raw data form

‘Drill’ into data files using the Explorer view

Powerful active outline view speeds selection

... or follow analysis scenarios like Threadsafe to highlight issues

Flexibility with what you want to see
Hover on pie chart for a description

### Suspend time component

<table>
<thead>
<tr>
<th>Component</th>
<th>Time (average)</th>
<th>Count (average)</th>
<th>%Suspend time</th>
<th>%Relative</th>
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<tbody>
<tr>
<td>Suspend time</td>
<td>0.025525</td>
<td>8.317228</td>
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<tr>
<td>Total I/O wait time</td>
<td>0.021456</td>
<td>0</td>
<td>84.40%</td>
<td>84.10%</td>
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<td>TC I/O wait time</td>
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<tr>
<td>TS I/O wait time</td>
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<tr>
<td>Shared TS I/O wait time</td>
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<tr>
<td>TD I/O wait time</td>
<td>0.001483</td>
<td>2.039604</td>
<td>5.81%</td>
<td>5.91%</td>
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<tr>
<td>JC I/O wait time</td>
<td>0.001256</td>
<td>2.439206</td>
<td>71.52%</td>
<td>85.03%</td>
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<tr>
<td>File I/O wait time</td>
<td>0.001736</td>
<td>2.459406</td>
<td>6.76%</td>
<td>8.64%</td>
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<td>RLS File I/O wait time</td>
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<tr>
<td>CSFT wait time</td>
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<tr>
<td>Inbound socket I/O wait time</td>
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<td>IPCONN I/O wait time</td>
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<tr>
<td>Outbound socket I/O wait time</td>
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</tr>
<tr>
<td>Inter-Region I/O wait time</td>
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<td>LU61 I/O wait time</td>
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<td>LU62 I/O wait time</td>
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<td>FERI I/O wait time</td>
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<tr>
<td>Other wait time</td>
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<td>Fast dispatch delay time</td>
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<td>1</td>
<td>7.43%</td>
<td>46.64%</td>
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</table>
What is CICS Performance Analyzer?

- A tool to provide ongoing system management and measurement reports on all aspects of CICS application performance

What’s its value?

- Reduce both time and resources required to analyze off-line performance data for tuning and capacity planning
- CICS PA is IBM’s strategic SMF reporter for CICS. It complements Omegamon XE for CICS (on-line tool)

How does it enhance the management of CICS?

- CICS Performance Analyzer for ‘offline’ analysis
- Provides ongoing system management and measurement reports on all aspects of CICS application performance
- Enables deep-dive CICS performance analysis and understanding of usage trends
- Aids capacity planning and tuning
- Helps quickly identify trends, anticipate and prevent online performance problems
Discussion